

**Check all punctuation to make sure it is correct;
look for all appendices that do not belong in the rule;
look at all catchlines (verbage following the 01., 02., etc.
subsection levels) to make sure that they are correct; and
look for any alpha numerics that are not correct.**

Look for all appendices that do not belong in the rule!

NEED to ADD or REVISE:

- 001.. TITLE AND SCOPE (RULE 1)..
- 002.. WRITTEN INTERPRETATION (RULE 2)..
- 003.. ADMINISTRATIVE APPEALS (RULE 3)..
- 004.. INCORPORATION BY REFERENCE (RULE 4)..

**IDAPA 37
TITLE 03
CHAPTER 09**

37.03.09 - WELL CONSTRUCTION STANDARDS RULES

000.. LEGAL AUTHORITY (RULE 0)..

The Idaho Water Resource Board adopts these rules under the authority provided by Section 42-238(4), Idaho Code.
()

001.. TITLE AND SCOPE (RULE 1)..

01.. Title The title of this chapter is IDAPA 37.03.09, "Well Construction Standards Rules." ()

02.. Scope The Department of Water Resources has statutory responsibility for administering the appropriation and allotment of the ground water resources of the state and to protect the resource against waste and contamination. The 1987 Idaho Legislature enacted amendments to the existing statutes which requires amendment of the construction standards. These rules are applicable to all water wells, monitoring wells, low temperature geothermal wells, injection wells and other artificial openings, excavations, or improvements in the ground which are more than eighteen (18) feet in vertical depth below land surface as described in these rules. The intend of these rules shall be observed for any hole construction, modification, or improvement which does not otherwise meet the definition of a well. If waste or contamination can be attributed to this type of hole, the hole shall be repaired or decommissioned as required by the Director ()

002.. WRITTEN INTERPRETATION (RULE 2)..

003.. ADMINISTRATIVE APPEALS (RULE 3)..

004.. INCORPORATION BY REFERENCE (RULE 4)..

005.. OFFICE -- OFFICE HOURS -- MAILING ADDRESS AND STREET ADDRESS (RULE 5)..

01.. Office Hours Office hours are 8 a.m. to 5 p.m., Mountain Time, Monday through Friday, except holidays designated by the state of Idaho. ()

02. **Mailing Address.** The mailing address for the state office is Idaho Department of Water Resources, P.O. Box 83720, Boise, Idaho 83720-0098. ()

03. **Street Address.** The street address for the state office of the Department of Water Resources, the regional offices in Idaho Falls, Coeur d'Alene, Iwin Falls, and Boise, and the satellite offices in Salmon, Soda Springs, and Lewiston may be obtained by calling the state office at (208) 327-7900, or by visiting the Department's website at <http://www.idwr.state.id.us> ()

006. **PUBLIC RECORDS ACT COMPLIANCE (RULE 6).**

007. -- 009. **(RESERVED).**

010. **DEFINITIONS (RULE 10).**

Unless the context otherwise requires, the following definitions govern these rules. ()

01. **Abandoned Well.** Any well which has been permanently removed from service by filling and/or plugging in accordance with these rules so that it is rendered unproductive and will prevent contamination of the ground water. ()

02. **Abandonment. (Also known as decommissioning)** The act of filling or plugging of a well so that the well will not: 1) produce water, 2) serve as a conduit for the movement of pollution, 3) allow the movement of ground water between aquifers, or 4) allow the upward or downward movement of water within the annular space or into the aquifer. ()

03. **Annular Space.** The space between two (2) concentric cylindrical objects, one (1) of which surrounds the other, such as the space between the walls of a drilled hole (well bore) and a casing or between a temporary surface casing and a permanent casing. ()

04. **Aquifer.** Any geologic formation that will yield water to a well in sufficient quantities to make the production of water from the formation feasible for beneficial use. ()

05. **Area of Drilling Concern.** An area designated by the Director in accordance with Section 42-238(15), Idaho Code. ()

06. **Artesian Water.** Any water that is confined in an aquifer under pressure so that the water will rise in the well casing or drilled hole above the elevation where it was first encountered. Artesian water includes water of flowing wells and water under pressure in wells that do not flow. ()

07. **Filter Pack (also known as artificial filter pack).** Clean, well-rounded, smooth, uniform sand or gravel insert used for placement in the annular space between the borehole wall and perforated well casing or well screen. A filter pack is used to prevent the movement of fine sediment into the well casing and to enhance the ability of the well to yield water. ()

Bentonite A sodium montmorillonite clay approved by the NSF for well sealing, plugging, or abandonment.

a) **Bentonite Chips.** Bentonite that is composed of pieces greater than 3/8-inch on their greatest dimension.

b) **Bentonite Granules (also known as granulated bentonite).** Bentonite that is composed of pieces less than 3/8-inch on their greatest dimension.

c) **Bentonite Grout.** A mixture of bentonite and clean water with a solids content not less than 30% by weight (30% solids content by weight = 50 pounds bentonite per 14 gallons of water) The bentonite used shall be specifically designed by the manufacturer for use as a well or casing sealing material and be approved by

National Sanitation Foundation for use in water well construction. All bentonite grout shall be pumped in place from the bottom upward via tremie pipe or other method of positive displacement approved by the Director.

d) **Bentonite Pellets.** Bentonite that has been manufactured for a specific purpose. May be compressed, coated, and of various size.

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09. **Board** The Idaho Water Resource Board.

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10. **Bore Diameter.** The diameter of the hole in the formation made by the drill bit or reamer.

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XX Borehole (also know as well bore). The hole caused by the drilling process.

11. **Bottom Hole Temperature of an Existing or Proposed Well.** The temperature of the ground water encountered in the bottom of a well.

()

12. **Casing.** (Also know as permanent or required casing). A conduit, generally of steel, used to maintain the well opening and to contribute to prevention of waste and contamination of the ground water as required by these standards, or as otherwise used in the construction of a well. It does not include well screens or liners used in the construction of a well. Use of any material other than steel requires approval in advance from the Director.()

13. **Cathodic Protection Well.** Any artificial excavation in excess of eighteen (18) feet in vertical depth constructed for the purpose of protecting certain metallic equipment in contact with the ground. Commonly referred to as cathodic protection.

()

XX Cement.

14. **Cement Grout (also known as Neat Cement Grout).** A mixture of potable water and Portland cement Types I, II, and III or high alumina cements with the addition of pre-hydrated bentonite. The total amount of water used, including pre-hydration of added bentonite, shall not exceed 6.5 gallons per 94-pound sack of cement. The grout shall be mixed and installed in accordance with the American Petroleum Institute Standards - API Class A through H, as found in API RP10B "Recommended Practice for Testing Oil Well Cements and Cement Additives," current edition or other approved standards.

()

XX Clean Water. See Potable water.

15. **Closed Loop Heat Exchange Well** A ground source exchange well constructed for the purpose of installing any underground closed loop system through which heated fluids are circulated.

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16. **Conductor Pipe** A permanent relatively short string of large-diameter pipe which is set to keep the top of the hole open and provide a means of returning the up flowing drilling fluid from the well bore to the surface drilling fluid system until the first casing string is set in the well.

()

17. **Consolidated Formations.** Naturally-occurring geologic formations that have been lithified (turned to stone). The term is sometimes used interchangeably with the word "bedrock" and includes rocks such as basalt, rhyolite, sandstone, limestone and shale. Commonly, these formations will stand at the edges of a borehole without caving.

()

18. **Contamination** The introduction into the natural ground water of any physical, chemical, biological or radioactive material which may:

()

- 161 a. Cause a violation of State Drinking Water Standards; or ()
162
163 b. Adversely affect the health of the public; or ()
164
165 c. Adversely affect a designated and protected use of the State's ground water Contamination
166 includes the introduction of heated water or cooled water into the ground water if the alteration of ground water
167 temperature renders the ground water less suitable for beneficial use ()
168
169 19. **Department.** The Idaho Department of Water Resources. ()
170
171 20. **Director.** The Director of the Idaho Department of Water Resources or his duly authorized
172 representatives. ()
173
174 21. **Disinfection.** Disinfection (or disinfecting) is the use of chlorine or other agents or process
175 approved by the Director in sufficient concentration and contact time adequate to kill bacteria and pathogens.
176 ()
177
178 **XXDecontamination of equipment.** The process of cleaning equipment prior to insertion into an existing
179 well to prevent entrance of any contamination that may degrade water quality.
180
181
182 23. **Drive Point Well (also known as a sand point well).** A well constructed by joining a "drive
183 point" to a length of pipe, then driving the assembly into the ground. Drive point wells are not allowed to exceed
184 18-feet in depth. ()
185
186 **XX.Dry Hole Well.** (Also know as an unusable well). A well that does not yield an adequate amount of
187 water to be feasible for beneficial use. Dry hole wells shall be decommissioned in accordance with these rules.
188
189 24. **Formation Sealing.** Formation seals are required to protect ground water from waste, contamination, and
190 commingling of waters. Formation seals may be required from the production zone continuously to land surface.
191 The installation shall be in a manner that will:
192 a. completely fill the annular space or other spaces or voids created by drilling;
193 b. Act as an impermeable barrier to vertical movement of fluids in the annular space or other voids
194 created by drilling.
195 ()
196
197 **XX Gravel pack.** See filter pack
198
199
200 26. **Hydraulic Fracturing** A process whereby water or other fluid is pumped under high pressure
201 into a well to fracture and clean-out the reservoir rock surrounding the well bore in order to increase flow into the
202 well. ()
203
204 27. **Injection Well.** Any excavation or artificial opening into the ground which meets the following
205 three (3) criteria: ()
206
207 a. It is a bored, drilled or dug hole, or is a driven mine shaft or driven well point; and ()
208
209 b. It is deeper than its largest straight-line surface dimension; and ()
210
211 c. It is used for or intended to be used for subsurface placement of fluids. ()
212
213 28. **Intermediate Casing String** The casing installed below the bottom of the surface casing within
214 any well to seal out specific zones. Such strings may either be lapped into the surface casing or extend to land
215 surface. ()
216

217
218 **30. Liner.** The inner tubing, piping or conduit placed inside a casing. A liner extending beyond a
219 casing shall be considered casing and must meet all casing requirements. ()
220

221 **31. Mineralized Water** Ground water that has concentrations of IDS (total dissolved solids)
222 greater than 5000 ppm. ()
223

224 **32. Modify** To deepen a well, increase or decrease the diameter of the casing or the well bore, install
225 a liner, place a screen, perforate existing casing or liners, alter the seal between the casing and the well bore, cut the
226 casing to install a pitless adapter, repair or replace the pitless adapter, or alter the well to not meet the minimum well
227 construction standards as determined by the Director. (NOTE not IDWR finalized) ()
228

229 **33. Monitoring Well** Any well more than eighteen (18) feet in vertical depth constructed to evaluate,
230 observe or determine the quality, quantity, temperature, pressure or other characteristics of the ground water or
231 aquifer. In Idaho, monitoring wells shall be designed by Professional Engineers licensed under the authority of I.C.
232 §54-1201 *et. seq* or Professional Geologists licensed under the authority of I.C. §54-2801 *et seq* ()
233

234 **34. Neat Cement.** Types I, II, III, or high-alumina cement mixed with not more than six (6) gallons of
235 potable water per 94 pound sack of cement ()
236

237
238 **37. Pitless Adaptor or Pitless Unit.** An assembly of parts designed for attachment to a well casing
239 which allows subsurface pump discharge and access to the interior of the well casing for installation or removal of
240 the pump or pump appurtenances, while preventing contaminants from entering the well. ()
241

242
243 XX. Potable Water Water suitable for human consumption
244

245 **38. Production String.** The casing or tubing through which water resources are produced. This string
246 extends from the producing zone to land surface. ()
247

248
249 **40. Remediation Well** A well used to inject or withdraw fluids, vapor, or other solutions approved
250 by the Department for the purposes of remediating, or controlling potential or known contamination. Remediation
251 wells include air sparging well, vapor extraction well, and wells for injection of chemicals for remediation or
252 treatment of contaminated sites. ()
253

254
255 **41. Seal or Seal Material.** The impermeable material, such as cement grout, bentonite grout, neat
256 cement grout, or neat cement placed in the annular space between the borehole wall and the permanent casing, to
257 prevent the downhole movement of water or the vertical movement and mixing of artesian waters. (NOTE not
258 IDWR finalized) ()
259

260 **42. Surface Casing.** The shallowest permanent casing string required to protect fresh water zones, to
261 provide sufficient pressure control during drilling operations, and to support the wellhead. ()
262

263 **43. Surface Seal.** An approved seal material installed in the annular space between the borehole and
264 the permanent surface casing that prevents surface water from moving down the outside of the permanent casing
265 into the well or the subsurface. ()
266

267 XX PVC material. Plastic piping material that meets ASTM F-480 requirements and may be used as a
268 well liner when completely encased by well casing. (NOTE not IDWR finalized)
269

270 **44. Unconsolidated Formation.** A naturally-occurring earth formation that has not been lithified.
271 Alluvium, soil, sand, gravel, clay, and overburden are some of the terms used to describe this type of formation. ()
272

45. Unproductive well (Also know as an unusable well). See Dry Hole well ()

46. **Well** An artificial excavation or opening in the ground more than eighteen (18) feet in vertical depth below land surface by which ground water of any temperature is sought or obtained. The depth of a well is determined by measuring the maximum vertical distance between the land surface and the deepest portion of the well. Well also means any waste disposal and injection well as defined by Section 42-3902, Idaho Code. Well also means any test well, monitoring well, cathodic protection well, observation well, recycling well, ground source heat exchange well, or exploratory well more than eighteen (18) feet in vertical depth below land surface that is constructed to evaluate the ground water resource or to evaluate contamination of the resource. Well does not mean a hole drilled for mineral exploration, oil and gas exploration (for which a permit has been issued pursuant to Section 47-320, Idaho Code), for mine shafts or adits, for temporary construction dewatering, for foundation geotechnical evaluations, or for elevator shaft installation.. ()

47. **Well Development**. Well development is the process of establishing the optimal hydraulic production between the well and the aquifer supplying water. Development by bailing, pumping, surging, or jetting will maximize water yield, break down the compacted borehole wall, liquefy jelled mud and remove mud and formation fines from the well. ()

49. **Well Driller**. Any driller or operator authorized under I.C. §42-238. .

()

50. **Well Drilling**. The act of constructing or modifying a well ()

51. **Well Owner**. The owner of the land on which the well is located unless a deed, covenant, contract, easement, or other documentation acceptable to the director is provided to demonstrate that the well is owned by another. ()

52. **Well Rig** Any power driven mechanical equipment used in the construction or modification of a well. ()

011. ABBREVIATIONS (RULE 11).

012. -- 024. (RESERVED).

025. GENERAL STANDARDS FOR CONSTRUCTION OF COLD WATER WELLS (RULE 25).

01. **Standards for Every Well**. The Well Driller shall construct each well that: ()

a. Is in accordance with these rules and as required by the "conditions of approval" of any drilling permit approved pursuant Section 42-235, Idaho Code and in a manner that will guard against waste, commingling of aquifer, and contamination of the ground water resources. The adopted standards are minimum standards that must be adhered to in the construction of all wells. The Director shall, when necessary to protect the ground water resource, require that specific wells be constructed with additional standards. The well driller and the property owner are charged with the responsibility of taking whatever steps might be necessary in any unique situation to guard against waste, commingling of aquifer, and contamination of the ground water resources

XX. Is based on the geologic and ground water conditions known to exist or are anticipated at the well site;()

b. Is capable of producing, where obtainable, the quantity of water to support the beneficial uses by the Well Owner, subject to law; ()

c. Complies with these standards and the following siting and distance requirements:

()

Separation of Well from:	Minimum Separation Distance (feet)
Any underground tank	50
Septic drain field	100
Septic Tank	50
Septic Tank with more than 2,500 GPD of sewage inflow	300
Sewer line (gravity)	50
Sewer line (pressure)	100
Property Line	10
Permanent Buildings or structures	10
Streams, canals, irrigation ditches or laterals, and other permanent, temporary, or intermittent bodies of water	50

Compliance with the above separation distances does not exempt the driller from complying with other requirements established by authorized bodies (e.g. District Health Departments, Idaho Department of Environmental Quality, etc.)

d. If used for injection, complies with these standards and IDAPA 37.03.03, "Rules for the Construction and Use of Injection Wells";

e. If used for a Public Water Supply, complies with these standards and with IDAPA 58.01.08, "Idaho Rules for Public Drinking Water Systems."

02. Waivers. The Well Driller (or Well Designer, if different) may submit detailed plan and written request to the Director for a waiver of these standards. If the Director determines that the ground water resources will be protected, without complying with the minimum well construction standards the request may be approved. Drilling shall not commence until the Director has approved the proposed drilling plan in writing.

03. Requirements for Licensure. No person except Well Drillers licensed under the authority of I.C. §42-238 shall construct or modify a well.

04. Documents to be Provided to Well Owner. The Well Driller shall provide the Well Owner with a copy of the approved well permit prior to commencement of drilling activities and a copy of the Well Driller's report upon completion of the well.

026. -- 029. (RESERVED).

030. STANDARDS FOR STEEL CASING AND LINERS (RULE 30).

01. Requirement for Casing The Well Driller shall install casing in every water well and injection well.

02. Minimum Steel Casing Specifications. The Well Driller shall install steel casing that meets or exceeds the American Society of Testing and Materials (ASTM) standard A53, Grade B or API 5L Grade B, and that meets the following specifications:

Minimum Specifications for Permanent Steel Casing		
Nominal Size (in.)	Outside Diameter (in.)	Nominal Wall Thickness (in.)

4	4.5	0.237
5	5.563	0.258
6	6.625	0.280
8	8.625	0.322
10	10.75	0.365
12	12.75	0.375
14	14	0.375
16	16	0.375
18	18	0.375
20	20	0.375
22	22	0.375
24	24	0.375
26	26	0.375
28	28	0.375
30	30	0.375
32	32	0.375
34	34	0.375
36	36	0.375

()

03. Standards for Casing and Liner Installation. The Well Driller shall:

()

a. Ensure that the casing extends at least eighteen (18) inches above the higher of: 1) land surface; 2) finished grade; or 3) the 100-year flood elevation at well location:

c. Ensure that the casing extends to the depth required by these rules; and

d. Ensures that the casing extends a minimum of eighteen (18) feet below land surface.

e. Install a commercially manufactured snorkel well cap vent when local conditions or the well owner require top of casing to be installed below the above 100-year flood elevation.

()

f. Upon completion of drilling and prior to removal of well drilling equipment from the well site, shall cover the top of the casing with a one-fourth inch (1/4") thick, solid, new or like-new steel plate fully welded in place, or a commercially manufactured well cover cap that will prevent the entrance of fluids into the well. Cast aluminum caps are prohibited. If the well flows at land surface the well driller shall install a Department approved control device pursuant RULE 74.

()

c. Join casing and liner lengths by welded joints or screw-couple joints and shall ensure that the welded joints are straight and water tight.

()

d. Ensure that welded joints shall be made using welding rods of at least equal quality to the most noble metal, shall be at least as thick as the wall thickness of the well casing, and shall be fully penetrating. Casing ends to be joined by welding shall be properly prepared, beveled and gapped to allow full penetration of the weld. Welded joints shall have a minimum of two (2) passes including a "root" pass and have minimal undercut when complete.

()

f. N not use perforated casing as working casing while the hole is being drilled, except in water table conditions where no confining layers will be penetrated.

()

03. **Standards for Strength of Casing and Liners.** The Well Driller shall install casing and liners that have sufficient strength to withstand the normal forces and the corrosive effects for the life of the well. ()

031. -- 034. (RESERVED).

035. **STANDARDS FOR WELL SIZE (RULE 35).**

Based on the yield the well owner requires and upon subsurface conditions, the Well Driller shall install casing of sufficient size to produce the desired yield without harm to the aquifer. Minimum sufficient size casing shall be defined according to the table below:

()

Well Yield Design (gpm)	Nominal Size of Pump Bowls (inches)	Minimum Size of Well Casing (inches)
Less than 100	4	6 ID
75 to 175	5	8 ID
150 to 350	6	10 ID
300 to 700	8	12 ID
500 to 1000	10	14 OD
800 to 1800	12	16 OD
1200 to 2500	14	20 OD
2000 to 3000	16	24 OD
3000 to 4500+	20	30 OD

()

036. **STANDARDS FOR PLUMBNESS AND ALIGNMENT (RULE 36).**

The Well Driller shall install casings and liners sufficiently plumb and straight to allow the installation or removal of screens, liners, pumps and pump columns without binding or having adverse effects on the operation of the installed pumping equipment ()

01. **The Well Driller shall demonstrate plumbness and alignment by one of the following methods:**

a. By performing a cylindrical plummet test, or

b. By using a photographic, mechanical, or pendulum drift indicator, or

c. By successfully passing a forty-foot test section of pipe not less than 0.5 inch smaller than casing I.D. freely from the bottom of the well. ()

037. -- 039. (RESERVED).

040. **STANDARDS FOR PLASTIC CASING AND LINERS (RULE 40).**

PVC well casing may be used in monitoring wells or as a liner inside steel casing without a waiver. All PVC pipe shall be new and be clearly marked "Well Casing" by the manufacturer. All PVC casing or liner shall conform to ASTM F480-02. PVC casing used in monitoring wells shall be a minimum of schedule 40. PVC liner shall have a minimum wall thickness equal to or greater than SDR 21

The use of PVC as casing for water wells may be considered on a case-by-case basis only upon submittal of a written and detailed request for a waiver. The waiver may be approved if it is determined that the proposed use of PVC will protect the resource. When approved for use in water wells as casing, PVC shall have a minimum wall thickness equal to or greater than SDR 17, shall be installed with centralizers placed not more than 25 feet apart, and shall be fully supported by filter pack in the screened interval and sealed by positive displacement from the top of the filter pack to land surface. Filter pack or reserve filter pack (the additional amount of filter pack material emplaced above a well screen to allow for settling) shall not extend past any confining layer above the screened interval. All PVC casing shall be installed under tension, and in accordance with the manufacturers recommendations and specifications. ()

041. -- 049. (RESERVED).

050. GENERAL STANDARDS FOR SEAL MATERIAL (RULE 50).

The Well Driller may use bentonite or cement sealants to seal wells. ()

01. Standards for Bentonite Sealants.

a. The Well Driller may install pelletized, granulated, powder, or chip bentonite in the construction of seals or in decommissioning of wells. ()

b. The Well Driller shall install only bentonite specifically designed for sealing or decommissioning and within the industry tolerances for dry western sodium bentonite ()

c. All unhydrated bentonite used for sealing or decommissioning must be free of organic polymers. ()

d. Polymer additives must be designed and manufactured to meet industry standards to be non-degrading and must not act as a medium which will promote growth of micro-organisms ()

e. The Well Driller shall install and place bentonite in accordance with the manufacturer's specifications. ()

f. The Well Driller shall install dry granular bentonite or bentonite chips in an annular space with a minimum diameter of four (4) inches larger than the nominal size of the largest-diameter casing. ()

02. Standards for Cement Sealants

a. Neat cement consists of either portland cement types II, III, or high-alumina cement mixed with not more than six (6) gallons of potable water per sack of cement (ninety-four (94) pounds per sack) ()

b. Neat cement grout consists of neat cement with up to five (5%) percent bentonite clay added, by dry weight of the bentonite. Bentonite is added to improve flow qualities and compensate for shrinkage. ()

c. Concrete sealants consist of clean, hard and durable aggregate with not less than five (5) sacks (ninety-four (94) pounds per sack) of portland cement per cubic yard of concrete sealant ()

i. The maximum diameter of aggregate particles may not exceed one and one-half (1 1/2) inches, but in any case may not exceed one fifth (1/5) the minimum width of the casing thickness ()

ii. The ratio of coarse aggregate to fine aggregate (passing No 4 U.S. Standard Sieve) must be approximately one and one-half to one (1 1/2 to 1) by volume, but in any case, may not exceed two to one (2 to 1) nor be less than one to two (1 to 2). ()

Not yet addressed by Committee

iii. Expanding agents, such as aluminum powder, may be used at a rate not exceeding seventy-five thousands (0 075) ounce (one (1) level teaspoon) per sack (ninety-four (94) pounds per sack) of dry cement. The powder may not contain polishing agents. High-alumina cement and portland cement of any type must not be mixed together.

()

03. Prohibited Seal Materials. The Well Driller shall never use drill cuttings, native dirt, soil, sand or gravel, or puddling clay to seal a well.

()

04 Seal Placement Approved seal material shall be installed by one (1) or more of the following methods:

a. Seal material placed below the water table by pressure piping directly to the point of application or by placing by using a dump bailer or tremie tube. When used to place seal material, the discharge end of the tremie pipe shall be submerged in the grout to avoid breaking the seal while filling the annular space.

b. Cement, cement grout, or neat cement shall be installed below the water table by methods that avoid segregation or dilution of the material.

c. Only dry bentonite granules manufactured or treated for installation below the water level may be poured into the well.

d. Above the water table, dry bentonite granules may be poured into the borehole or well casing.

()

051. GENERAL METHODS FOR INSTALLATION (RULE 51).

The Well Driller shall:

01. Neat Cement or Neat Cement Grout. Place neat cement or neat cement grout at least seventy-two (72) hours before additional drilling takes place, unless special additives are mixed with the neat cement or neat cement grout that cause it to set in a shorter period of time.

02. Hydrated Seal Material Install all hydrated seal material using a tremie pipe or by pressure pumping the mixture from the bottom of the annular space to the surface in one continuous operation.

03. Fills the Annular Space Ensure that pelletized, granulated, powdered, or chipped unhydrated bentonite completely fills the annular space and the seal is free of voids or bridges.

04. Calculate the Volume of Unhydrated Bentonite. Shall calculate the volume of unhydrated bentonite that would fill the annular space between the casing and the borehole and shall store at least 125% of the calculated unhydrated bentonite at the drill site.

05. Pouring Unhydrated Bentonite from the Surface. If pouring unhydrated bentonite from the surface to fill the annular space between the casing and the borehole, shall pour bentonite around all sides of the casing and shall use a tag line to measure the depth to the top of the bentonite.

06. Installing Unhydrated Bentonite Below the Water Table If installing unhydrated bentonite below the water table, shall install only unhydrated bentonite specifically manufactured for installation below the water level

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Not yet addressed by Committee

540 **07.. Installing Seal Material by Pressure Pumping.** If installing seal material by pressure pumping
541 though a tremie pipe or float shoe, the Well Driller may reduce the annular space between the casing and the
542 borehole from a minimum of four (4) inches to a minimum diameter of two (2) inches. ()
543

544 **052. REQUIREMENTS FOR SURFACE SEALING (RULE 52).**

545 The Well Driller shall seal in the annular space between the borehole and the permanent surface casing seal in all
546 water wells to prevent surface water from flowing down the outside of the casing. ()
547

548 **01.. Standards for Surface Sealants** The Well Driller shall: ()
549

550 a. Install the surface seal with a minimum diameter of four inches larger than the nominal size of the
551 surface casing, to include the outside diameter of the bell, the bell and hub couplings, and the drive shoe. ()
552

553 b. Install a surface seal from land surface to a minimum depth of ten feet below the lowest elevation
554 of the water table ()
555

556 c. If the lowest elevation of the water table is less than eight (8) ft below land surface, install a
557 surface seal from land surface to a minimum depth of eighteen (18) ft feet below the land surface ()
558

559 d. Ensure that the seal fully surrounds the permanent casing, is evenly distributed, is free of voids,
560 and extends to undisturbed or recompacted soil. ()
561

562 **02.. Methods to Install Surface Sealants.** The Well Driller may: ()
563

564 a. Install the surface seal by pressure grouting from the bottom of the annular space until the seal
565 material flows at the surface. ()
566

567 b. Install the surface seal through a tremie pipe. ()
568

569 c. Install the surface seal by pouring granular bentonite from the surface of the ground. When using
570 this method, the Well Driller will tag the top of the bentonite as it is poured from the surface. ()
571

572 **03. Use of Temporary Casing** The Well Driller may install temporary casing in all unconsolidated
573 formations such as in gravels, sands, or other unstable conditions where the Well Driller does not use drilling fluids
574 or other means to keep the borehole open. When the Well Driller removes the temporary surface casing, the Well
575 Driller shall place the seal material in the annulus in accordance with the procedures above. ()
576

577 **053. REQUIREMENT TO REPAIR OR REPLACE SURFACE SEALS (RULE 53).**

578 Whenever a Well Driller moves the permanent surface casing or damages the existing surface seal, or whenever a
579 Well Driller discovers that a surface seal was never installed on the well or has been damaged, the Well Driller shall
580 repair, replace, or install a minimum of eighteen feet of surface seal around the permanent casing. ()
581

582 **054. REQUIREMENTS FOR FORMATION SEALING (RULE 54).**

583 If the well obtains artesian water, the Well Driller shall seal the annular space between the borehole and the
584 permanent casing to prevent movement of artesian water flowing up or down the outside of the casing. ()
585

586 **01. Sealing of Unconsolidated Formations without Significant Clay Beds** If a Well Driller installs
587 a well into an aquifer overlain by unconsolidated formations (such as sand and gravel) without significant clay beds,
588 the Well Driller will seal the annular space between the borehole and the permanent surface to a minimum depth of
589 ten (10) feet below the lowest elevation of the water table. ()
590

591 **02. Sealing of Unconsolidated Formations with Significant Clay Beds.** If a Well Driller installs a
592 well into an aquifer overlain by clay or other confining formations that are at least six (6) feet thick, the Well Driller
593 shall seal the annular space between the borehole and the permanent surface casing. The Well Driller shall: ()
594

Not yet addressed by Committee

595 a. Install a borehole at least four inches greater in diameter than the nominal size of the permanent
596 well casing from the land surface into the clay bed or other confining formation located directly above the aquifer
597 from which the well will obtain water. ()

598
599 b. Fill the annular space with bentonite (slurry or unhydrated), cement grout, or neat cement to form
600 a watertight seal between the casing and all confining formations encountered during drilling. ()

601
602 c. Install all bentonite slurries, cement grout, or neat cement in the annular space by either pumping
603 or tremming the seal material from the lowest clay bed or other confining formation of significance encountered, to
604 land surface. ()

605
606 d. Keep the drill hole open through the use of a temporary casing or any other drilling method that
607 stabilizes the borehole wall. ()

608
609 **03. Sealing of Consolidated Formations.** If a Well Driller installs a well that penetrate an aquifer,
610 either within or overlain by a consolidated formation, the Well Driller shall seal the annular space between the
611 borehole and the permanent casing using one (1) of the following procedures: ()

612
613 a. Procedure One. The Well Driller shall: ()

614
615 i. Extend the upper drill hole at least four inches greater in diameter than the nominal size of the
616 permanent well casing from land surface into a sound, unfractured, consolidated formation. ()

617
618 ii. Install an unperforated permanent casing to extend to this same depth and drive the lower part of
619 the casing into the consolidated formation to establish a watertight seal between the formation and the casing.
620 ()

621
622 iii. Place seal the annular space on the outside of the casing to land surface with cement grout, neat
623 cement, or bentonite. ()

624
625 b. Procedure Two. The Well Driller shall: ()

626
627 i. Install an upper drill hole at least four inches greater in diameter than the nominal size of the
628 permanent casing from land surface to a depth of at least eighteen feet

629
630 ii. Drive an unperforated permanent casing into the consolidated formation to establish a watertight
631 seal between the formation and the casing. ()

632
633 iii. Keep the annular space between the upper drill hole and the permanent casing at least one-half (1/
634 2) full with unhydrated bentonite or bentonite slurry during driving of the casing into the consolidated formation. ()

635
636 iv. Fill the remainder of the annular space to land surface with cement grout, neat cement, or
637 bentonite.
638 ()

639
640 **055. -- 059. (RESERVED).**

641
642 **060. REQUIREMENTS FOR SEALING OF ARTESIAN WELLS (RULE 60).**

643 If the Well Driller installs a well that produces or obtains artesian water, the Well Driller shall: ()

644
645 **01. Install Unperforated Well Casing** into the confining stratum overlying the artesian zone and
646 emplace seal material on the outside of the casing, as described above; ()

647
648 a. If the well flows at the surface, install a control valve at the surface to ensure that the flow can be
649 completely stopped; and
650 ()

Not yet addressed by Committee

b. If leaks occur around the well casing or adjacent to the well, the Well Driller shall install seals, packers, casing or grout that will eliminate the leakage. The Well Driller shall not move his well drilling rig from the site until leakage has been eliminated. ()

02. Precautions to Case and Seal Out Aquifers Take all precautions to case and seal out aquifers which may lead to waste or contamination ()

061. REQUIREMENTS FOR SEALING OF ARTIFICIAL FILTER PACK WELLS (RULE 61).

The Well Driller shall seal every artificial filter pack well using one (1) of the following methods:

01. Sealing of Filter Pack With Access Pipes. If the Well Driller injects filter material through access pipes or tubes, the Well Driller may inject sealing materials through the access tubes. The Well Driller shall:()

a. shall ensure that the seal is watertight around the injection pipe and that the pipe is equipped with a watertight cap or plug. ()

b. shall ensure that the seal extends to a minimum of ten (10) feet below the lowest elevation of the water table. If the lowest elevation of the water table is less than eight (8) ft below land surface, the Well Driller shall install a surface seal from land surface to a minimum depth of eighteen (18) ft. feet below the land surface. ()

c. shall install a watertight cap or plug on the access pipe or pipes, if the pipes are used for injecting sand into the filter pack. ()

02. Sealing of Filter Pack with Temporary Casing If the Well Driller installs a temporary casing, the Well Driller shall. ()

a. install the temporary casing at least four inches in diameter greater than the permanent casing and will install the temporary casing to at least ten (10) ft. below the highest water table elevation. ()

b. shall fill the annular space on the outside of the permanent casing with cement grout or bentonite as the temporary casing is withdrawn. ()

062. REQUIREMENTS FOR SEALING OF DRIVEN WELLS (RULE 62).

(Note to IDWR, in definition section we stated that driven wells could not exceed 18-ft) The Well Driller shall install surface and formation seals in driven wells. The Well Driller shall: ()

01. Casing Drive each casing through an upper hole which shall be at least four (4) inches greater in diameter than the inner casing or liner; ()

02. Annular Space. Ensure that the annular space between the upper oversized drill hole and each casing is at all times at least one-half (1/2) full with bentonite or bentonite slurry at all times during driving of the pipe; ()

03. Temporary Casing. If a temporary casing or other means of maintaining an open borehole is utilized by the Well Driller, install temporary casing that has an outside diameter a minimum of four (4) inches larger than the permanent casing (for example, a ten (10) inch temporary casing for a six (6) inch permanent casing);()

04. Removal of the Temporary Casing. Shall fill the annular space between the borehole and the permanent surface with sealant during removal of the temporary casing. ()

063. REQUIREMENTS FOR SEALING OF JETTED WELLS (RULE 63).

(Note to IDWR, in definition section we stated that jetted wells were not allowed) The Well Driller shall install the seal in jetted wells to seal the annular space between the permanent casing and undisturbed native soil. The Well Driller shall ensure that the annular space between the upper oversized drill hole and the permanent casing is at all

Not yet addressed by Committee

times at least one-half (1/2) full with bentonite or bentonite slurry throughout all driving of the pipe. The remaining annular space to land surface shall be filled with cement grout, neat cement, or bentonite.

()

064. -- 069. (RESERVED).

070. INJECTION WELLS (RULE 70).

The construction and/or modification of all injection wells shall comply with IDAPA 37 03 03. Additionally, the construction and/or modification of all injection wells greater than 18-feet in depth shall comply with these rules. The well driller shall obtain a copy of the injection permit issued by the Department in addition to the required drilling permit prior to commencement of construction and/or modification of any injection well greater than 18-feet in depth.

()

071. CATHODIC PROTECTION WELLS (RULE 71).

Only a Well Driller shall construct, or abandon a cathodic protection well. Cathodic protection wells shall be constructed in compliance with these rules. A detailed construction plan shall be included with the drilling permit application

()

072. MONITORING AND REMEDIATION WELLS (RULE 72).

Well Designers shall submit designs and specifications for each monitoring or remediation well and every monitoring or remediation well network to the Director for approval

()

01. Plans and Specifications for Monitor or Remediation Wells and Well Networks. The designs and specification shall demonstrate that:

()

a. The ground water resources are protected against waste and contamination;

()

b. The monitoring wells and monitoring well network will obtain the information on water elevations and water quality for which the monitoring well or monitoring well network is required;

()

c. The remediation wells and remediation well network will inject or withdraw fluids (such as air, ground water, or other solutions approved by the Department) at the appropriate location and in sufficient quantities, at sufficient concentrations, and for sufficient duration to remediate, clean up, or control potential or known ground water contamination;

()

d. The remediation and monitoring wells will be constructed so as to prevent the spread of contamination between aquifers;

()

e. The well casing, screens, filler and seal materials are resistant to the corrosive effects of chemicals that might be expected in the ground water, and

()

f. The remediation and monitoring wells will be abandoned in accordance with the minimum standards herein.

()

02. Use of Monitor or Remediation Wells. No person may divert ground water for domestic, industrial, municipal, commercial, or agricultural uses from a remediation or monitoring well without the prior approval of the Director.

()

03. Requirements for Licensure. No person except Well Drillers licensed under the authority of Title 42, Chapter 2, Section 42-238 shall construct, install, or modify a monitor or remediation well.

()

073. ACCESS PORT (RULE 73).

All wells shall be equipped with an access port that will allow measurement of water level and well depth. Wells equipped with a commercially manufactured well cover cap as per RULE 30 do not require installation of an additional access port

()

Not yet added

074. FLOWING ARTESIAN WELLS. (RULE 74).

All wells that flow at land surface shall be equipped with a control device as required by I.C 42-1603. All control devices shall:

- a. completely control artesian flow from the well.
- b. allow for the installation and removal of a gauge to measure shut-in pressure.

074. -- 079. (RESERVED).

080. CONDITIONS REQUIRING THE ABANDONMENT (DECOMMISSIONING) OF A WELL (RULE 80).

The well owner shall maintain every well in a manner that will prevent waste or contamination of the ground water
The Director may require abandonment if the well: ()

- a. Cannot be maintained, modified, or repaired to meet these standards, ()
- b. Does not produce a sufficient quantity of water for a beneficial use. ()
- c. Produces sand in excess of the limits identified in RULE 96. ()
- d. Poses a threat to human health and safety ()
- e. If there is no valid water right or other required authorization for the use of the well. ()

081. PERSONS AUTHORIZED TO ABANDON (DECOMMISSION) WELLS (RULE 81).

No person shall abandon a well in Idaho without first obtaining a driller's license or receiving a waiver of the license requirement from the Director of the Department of Water Resources. Authorization is required from the Director prior to the abandonment. Upon completion of abandonment, the person who conducted the abandonment shall submit to the Department a report describing the abandonment. ()

082. PROCEDURES TO ABANDON (DECOMMISSION) WELLS (RULE 82).

The Director may require well abandonment in accordance with the following: ()

01. Cased Wells Without a Continuous Seal From Top of Intakes or Screen to the Surface. Use one (1) of the following methods: ()

a. The well casing shall be perforated every five (5) feet from the bottom of the casing to within five (5) feet of the surface. Perforations made shall be adequate to allow the free flow of seal material into any voids outside the well casing. There shall be at least four equally spaced perforations per section circumference. Approved grout shall be injected with sufficient pressure to fill any voids outside of the casing. A sufficient volume shall be used to completely fill the well. ()

b. Fill the borehole with approved seal material as the casing is being removed. ()

02. Cased Wells with Full-Depth Seals. If the well is cased and sealed from the top of the screen or production zone to the land surface, the well shall be completely filled with approved seal material. ()

03. Uncased Wells. Uncased wells shall be completely filled with approved seal material. ()

04. Placement of Seal Material. Approved seal material shall be placed in accordance of the requirements of RULE 50. ()

083. COMPLETION OF A WELL (RULE 83).

The well is considered complete upon removal of the drill rig from the well site unless the well driller has provided written notice to the Department that the well will be properly completed or abandoned within a specified period of time ()

084. PITLESS ADAPTERS. (RULE 84)

Only Well Drillers or by persons supervised by a Well Drillers shall

- a. Install, repair, or replace pitless adapters in a well ()
- b. Install only pitless adapters that are approved by Pitless Adapter Division of the Water Systems Council. ()
- c. Cut a hole with an opening large enough to allow seating of gaskets in the casing with a saw or cut a hole in the casing with a torch and using a cutting guide and weld the pitless adapter into place. ()
- d. Ensure that the pitless adapter does not allow water to descend down the inside of the well casing. ()
- e. Provide a contamination-proof entrance connection for electrical cable. ()

Alternative Rule 84

The installation of pitless adaptors will only be regulated by the Department if it is determined that the unit has been improperly installed or poses a threat to the resource

085. UNPRODUCTIVE (DRY HOLE) WELL. (RULE 85)

If after drilling the quantity of water to meet a beneficial use cannot be obtained, the Well Driller shall abandon the well in accordance with these rules. ()

086. -- 090. (RESERVED).**091. EXPLOSIVES. (RULE 91)**

The use of explosives inside the well casing is prohibited unless specifically authorized by the Director. ()

092. HYDRAULIC FRACTURING. (RULE 92)

Hydraulic fracturing shall be performed only by well drillers licensed in Idaho. The pressure shall be transmitted through a drill string and shall not be transmitted to the well casing. The driller shall provide a report to the Director of the fracturing work which shall include well location, fracturing depth, fracturing pressures and other data as requested by the Department. ()

093. DRILLING FLUIDS AND DRILLING ADDITIVES (RULE 93).

The Well Driller must use only potable water and shall use only drilling fluids or drilling additives that are manufactured for use in water wells, are National Sanitary Foundation (NSF), American Petroleum Institute (API), or ASTM/ANSI approved; and do not contain a concentration of any substance in excess of Primary Drinking Water Standards, as set forth in the current IDAPA 58 01.08, "Rules for Public Drinking Water Systems" in accordance with the manufacturer's specifications. The Well Driller may seek approval from the Director to use specific products on a case-by-case basis. ()

094. DISINFECTION AND DECONTAMINATION (RULE 94).

Every person shall clean and disinfect casing, tools, drilling equipment and materials, the pump, electrical wiring and controls, drop pipe, and all other equipment each and every time immediately prior to said equipment being inserted into the well. ()

01. Duties of Well Drillers Well Drillers shall

- a. Clean and disinfect all casing, tools, drilling equipment, and materials prior to beginning the drilling and construction of every well. ()

b. Disinfect all pumping equipment and sand or gravel used in an artificial filter-packed well and used to develop and pump test the well. ()

c. Use only potable water for drilling and for mixing of sealing material and shall ensure that the water has a chlorine residual of not more than one (1) part per million of free chlorine. ()

02. Disinfection Procedures. Every person shall clean and disinfect all equipment each and every time and immediately prior to the equipment being placed into the well. ()

a. Each person shall disinfect every well, the pump, electrical wiring and controls, drop pipe, and all other equipment using a fifty (50) mg/L chlorine solution. ()

b. Every person shall use all disinfectants in accordance with manufacturer's instructions. ()

c. No person shall pour, dispose, dump, discharge, or inject any fluid, liquid, or chemical into a well that would exceed the Primary Drinking Water Standards, as set forth in the current IDAPA 58 01 08, "Rules for Public Drinking Water Systems" ()

d. Every person shall maintain at all times on every well site adequate chlorine compounds, tools, and equipment to disinfect the well, the pump, electrical wiring and controls, drop pipe, and all other equipment in accordance with the following table. ()

Chlorine compound required to dose 100-ft. of water-filled well at 50 mg/L				
Casing Diameter in	Volume of water in casing per 100 ft. of water depth gallons	Amount of Chemical Compound needed for each 100 ft. of water		
		Calcium Hypochlorite ¹ (65% available Cl ₂)	Sodium Hypochlorite ² (12 trade percent)	Liquid Chlorine ³ (100 percent available Cl ₂) pounds
4	65.28	0.7 oz	3.5 oz	0.03
6	146.2	1.5 oz	7.8 oz	0.06
8	261.1	2.7 oz	13.9 oz	0.11
10	408.0	4.2 oz	1.4 pt	0.17
12	587.5	6.0 oz	2.0 pt	0.25
16	1044.0	10.7 oz	3.5 pt	0.44
20	1632.0	1 lb 1oz	0.7 gal	0.68
24	2350.0	1 lb 8 oz	1.0 gal	0.98
30	3672.0	2 lbs 6 oz	1.5 gal	1.53
36	5287.0	3 lbs 6 oz	2.2 gal	2.21
48	9400.0	6 lbs 1 oz	3.9 gal	3.92
60	14690.0	9 lbs 7 oz	6.1 gal	6.13

Footnotes:

¹The quantity of Calcium Hypochlorite is based on 65 percent available chlorine by dry weight.

²The quantity of Sodium Hypochlorite is based on 12-trade-percent available chlorine by US liquid measure.

(Trade percent is a term used by chlorine manufacturers. Trade percent x 10 = grams of available chlorine in 1 L of solution.)

³Quantity of liquid chlorine is based on 100 percent available chlorine by weight.

()

095. WELL SCREENS AND INTAKES (RULE 95).

The Well Driller shall construct every well to prevent the continued production of sand or other fine sediments. It may be necessary to install well screens, perforated intakes, and/or filter pack(s) to meet this requirement. The maximum sand content produced shall not exceed 15ppm. Wells used in connection with a public water system may have more stringent requirements.

Not yet addressed by Committee

096. WELL DEVELOPMENT AND TESTING (RULE 96).

The Well Driller shall develop every new well to maximize the yield. The Well Driller shall determine the static water level, pumping water level, and the production rate of every well. The production rate shall be determined by a test of at least one (1) hour in duration. This information shall be documented on the Well Driller's report.

()

098. CLOSED LOOP HEAT EXCHANGE WELLS (RULE 98).

The Well Driller shall construct closed loop heat exchange wells in accordance with the intent of these rules and to prevent waste, contamination and/or aquifer commingling. The Well Driller is not required to install casing in such wells. ()

01. Installation of Closed Loop Wells When constructing a closed loop heat exchange well, the Well Driller shall: ()

a. Construct each borehole a minimum of 4-inches larger than the combined diameter of the circulating pipes to allow the placement of approved seal material. Approved grout material shall be pumped from the bottom of the borehole to land surface. ()

()

b. Install fluid-tight circulating pipe composed of polyethylene, grade p34, minimum cell classifications PE 355434C or PE 345434C conforming to ASTM Standard 3350; ()

c. Join pipe using the socket or butt heat fusion technique referenced in ASTM Standards D3261 or D2683; ()

d. Use only food grade potassium acetate or food grade propylene glycol as circulating fluid; and

e. Pressure test the system before installation of the grout seal at no less than twice (two (2) times) the designed system operating pressure. ()

f. If a pressure loss is detected, the circulating pipe shall be replaced ()

099. -- 200. (RESERVED).**201. CONSTRUCTION OF LOW TEMPERATURE GEOTHERMAL RESOURCE WELLS AND BONDING (RULE 201).**

01. General Drillers constructing low temperature geothermal resource wells (bottom hole temperature more than eighty-five (85) Degrees F and less than two hundred twelve (212) Degrees F) shall be qualified under the Well Driller Licensing Rules. All low temperature geothermal resource wells shall be constructed in such a manner that the resource will be protected from waste due to lost artesian pressure and temperature. The owner or well driller is required to provide bottom hole temperature data, but the Director may make the final determination of bottom hole temperature, based upon information available to him. ()

a. All standards and guidelines for construction and abandonment of cold water wells shall apply to low temperature geothermal resource wells except as modified by Rule Subsections 030 03, 030 04, and 030 06. ()

()

b. A drilling prospectus shall be submitted to and approved by the Director prior to the construction, modification, deepening or abandonment of any low temperature geothermal resource well. The well owner and the well driller are responsible for the prospectus and subsequent well construction. ()

Not in Committee Charter

02. **Well Owner Bonding** The owner of any low temperature geothermal resource well shall file a surety bond or cash bond as required by Section 42-233, Idaho Code, with the Director in an amount not less than five thousand dollars (\$5,000) nor more than twenty thousand dollars (\$20,000) payable to the Director prior to constructing, modifying or deepening the well after July 1, 1987. The bond amount shall be determined by the Director within the following guidelines. The bond shall be kept in force for one (1) year following completion of the well or until released in writing by the Director, whichever occurs first. ()

a. Any well less than three-hundred (300) feet deep with a bottom hole temperature of less than one hundred twenty (120) Degrees F and a shut-in pressure of less than ten (10) pounds per square inch gage (psig) at land surface shall maintain a bond of five thousand dollars (\$5,000). ()

b. The owner of any well three hundred (300) feet to one thousand (1,000) feet deep with a bottom hole temperature of less than one hundred fifty (150) Degrees F and a shut-in pressure of less than fifty (50) psig at land surface shall maintain a bond of ten thousand dollars (\$10,000). ()

c. The owner of any low temperature geothermal resource well not covered by Rules Subsections 030.02 a. and 030.02 b. shall maintain a bond of twenty thousand dollars (\$20,000). ()

d. The Director may decrease or increase the bonds required if it is shown to his satisfaction that well construction or other conditions merit an increase or decrease. ()

e. The bond requirements of Section 42-233, Idaho Code, are applicable to wells authorized by water right permits or licenses having a priority date earlier than July 1, 1987, if the well authorized by the permit or license was not constructed prior to July 1, 1987 or if an existing well constructed within the terms of the permit or license is modified, deepened or enlarged on or after July 1, 1987. ()

03. **Casing.** Low temperature geothermal resource wells shall be protected from cooling by preventing intermingling with cold water aquifers and from loss of pressure by preventing flow into zones of lower pressure. ()

a. Casing which meets or exceeds the minimum specifications for permanent steel casing of Rule Subsection 035.02 shall be installed in every well. The Director may require a more rigid standard for collapse and burst strength as depths or pressures may dictate. Every low temperature geothermal resource well which flows at land surface shall have a minimum of forty (40) feet of conductor pipe set and cemented its entire length. ()

b. Casing shall be installed from twelve (12) inches above land surface into the overlying confining strata of the thermal aquifer. The casing schedule may consist of several different casing strings (i.e. conductor pipe, surface casing, intermediate casing, production pipe) which may all extend to land surface or may be overlapped and sealed or packed to prevent fluid migration out of the casing at any depth. ()

i. Low temperature geothermal resource wells less than one thousand (1,000) feet deep and which encounter a shut-in pressure of less than fifty (50) psig at land surface shall have two (2) strings of casing set and cemented to land surface. Conductor pipe shall be a minimum of forty (40) feet in length or ten percent (10%) of the total depth of the well whichever is greater. Surface casing shall extend into the confining stratum overlying the aquifer. ()

ii. Low temperature geothermal resource wells one thousand (1,000) feet or more in depth or which will likely encounter a shut-in pressure of fifty (50) psig or more at land surface require prior approval of the drilling plan by the Director and shall have three (3) strings of casing cemented their total length to land surface. Conductor pipe shall be a minimum length of forty (40) feet. Surface casing shall be a minimum of two hundred (200) feet in length or ten percent (10%) of the total depth of the well, whichever is greater. Intermediate casing shall extend into the confining stratum overlying the aquifer. ()

c. Rule Subsection 030.13.b. may be waived if it can be demonstrated to the Director through the lithology, electrical logs, geophysical logs, injectivity tests or other data that formations encountered below the last casing string set, will neither accept nor yield fluids at anticipated pressure to the borehole. ()

Not in Committee's Charter

d. A nominal borehole size of two (2) inches in diameter larger than the Outside Diameter (O.D.) of the casing or casing coupler (whichever is larger) shall be drilled. All casing designations shall be by O.D. and wall thickness and shall be shown to meet a given specification of the American Petroleum Institute, the American Society for Testing and Materials, the American Water Works Association or the American National Standards Institute. The last string of casing set during drilling operations shall, at the Director's option, be flanged and capable of mounting a valve or blow out prevention equipment to control flows at the surface before drilling resumes. ()

04. **Sealing of Casing.** All casing shall be sealed its entire length with cement or a cement grout mixture unless waived by the Director. The seal material shall be placed from the bottom of the casing to land surface either through the casing or tubing or by use of a tremie pipe. The cement or cement grout shall be undisturbed for a minimum of twenty-four (24) hours or as needed to allow adequate curing. ()

a. A caliper log may be run for determining the volume of cement to be placed with an additional twenty-five (25%) percent on site ready for mixing. If a caliper log is not run, an additional one hundred (100%) percent of the calculated volume of cement shall be on site ready for placement. ()

b. If there is no return of cement or cement grout at the surface after circulating all of the cement mixture on site, the Department will determine whether remedial work should be done to insure no migration of fluids around the well bore. ()

c. The use of additives such as bentonite, accelerators, retarders, lost circulation material shall follow manufacturer's specifications. ()

05. **Blow Out Prevention Equipment.** The Director may require the installation of gate valves or annular blow out prevention equipment to prevent the uncontrolled blow out of drilling mud and geothermal fluid. ()

06. **Repair of Wells.** The well driller shall submit a drilling prospectus to the Director for review and approval prior to the repair or modification of a low temperature geothermal resource well. ()

07. **Abandoning of Wells.** Proper abandonment of any low temperature geothermal resource well requires the following: ()

a. All cement plugs shall be pumped into the hole through drill pipe or tubing. ()
(See Figure 5, APPENDIX E, (located at the end of this chapter).

b. All open annuli shall be completely filled with cement. ()

c. A cement plug at least one hundred (100) feet in vertical depth shall be placed straddling (fifty (50) feet above and fifty (50) feet below) the zone where the casing or well bore meets the upper boundary of each ground water aquifer. ()

d. A minimum of one hundred (100) feet of cement shall be placed straddling each drive shoe or guide shoe on all casing including the bottom of the conductor pipe. ()

e. A surface plug of either cement grout or concrete shall be placed from at least fifty (50) feet below the top of the casing to the top of the casing. ()

f. A cement plug shall extend at least fifty (50) feet above and fifty (50) feet below the top of any liner installed in the well. The Director may waive this rule upon a showing of good cause. ()

g. Other abandonment procedures may be approved by the Director if the owner or operator can demonstrate that the low temperature geothermal resource, ground waters, and other natural resources will be protected. ()

Not in Comm. H. & S. Chapter

1070
1071 h. Approval for abandonment of any low temperature geothermal well must be in writing by the
1072 Director prior to the beginning of any abandonment procedures. ()

1073
1074 202. -- 310. (RESERVED).
1075

1076 **311. HEALTH STANDARDS FOR PUBLIC WATER SUPPLIES (RULE 311).**

1077 As noted under Construction of Cold Water Wells, the Well Driller is responsible for compliance with separation
1078 distance required by this rule, however compliance with these required separation distances does not exempt the
1079 driller from complying with any other separation distances and/or health standards has established by other
1080 authorized regulatory bodies, e.g District Health Department, Idaho Department of Environmental Quality, etc" ()
1081

1082 **312. SPECIAL STANDARDS FOR CONSTRUCTION OF WELLS WHEN MINERALIZED OR**
1083 **CONTAMINATED WATER IS ENCOUNTERED (RULE 312).**

1084 If, during the construction of a well, mineralized or contaminated water is encountered, the Well Driller shall take
1085 the appropriate steps necessary to prevent the poor quality waters from entering the well or moving up or down the
1086 annular space around the well casing. The method employed to case out this water shall be determined by the Well
1087 Driller, provided the minimum standards are met. The Well Driller will take special precautions to prevent water of
1088 inferior quality from moving vertically in the filter pack in a filter-pack well. All actions taken will be clearly
1089 documented on the Well Driller's report ()
1090

1091 **313. DISTANCES FROM CONTAMINATION SOURCES (RULE 313).**

1092 The Well Driller shall install every well in compliance with minimum setback distances from contamination sources
1093 established by the appropriate District Health Department and set forth in Idaho Department of Environmental
1094 Quality rules, set forth in IDAPA 58.01.03, "Individual/Subsurface Sewage Disposal Rules" and set forth in IDAPA
1095 68.01 08, "Rules for Public Water Systems." ()
1096

1097 **314. OWNERS RESPONSIBILITIES FOR WELL MAINTENANCE (RULE 314).**

1098 After a well is complete, the well owner shall: ()
1099

1100 01. **Maintenance.** The well owner shall not allow modification to wells under their control without
1101 said work being covered by an IDWR valid permit ()
1102

1103 02. **New Construction.** Prevent construction of a building or structure closer than ten (10) ft from the
1104 well; ()
1105

1106 03. **Septic Tank Drainfields.** Prohibit construction or installation of septic tank drainfields and areas
1107 designated for replacement drainfields placed closer than one hundred (100) ft. from the well; ()
1108

1109 a. Ensure that septic tanks are installed greater than fifty (50) ft. from the well; and ()
1110

1111 b. Ensure that septic tanks into which more than two thousand five hundred (2,500) gallons per day
1112 (gpd) of sewage are discharged are installed greater than three hundred (300) ft from the well. ()
1113

1114 04. **Unusable Wells.** The Well Owner shall abandon an unusable well in accordance with these rules
1115 within 24 months unless the Well Owner demonstrates that further modifications, development, or repair will cause
1116 the well to no longer be unusable. ()
1117

1118 315. -- 320. (RESERVED).
1119

1120 **321. AREAS OF DRILLING CONCERN (RULE 321).**

1121 01. **General** ()
1122
1123

a. The Director may designate an "area of drilling concern" to protect public health, or to prevent waste and contamination of ground and/or surface water because of factors such as aquifer pressure, vertical depth to the aquifer, warm or hot ground water, or contaminated ground or surface waters. ()

b. The designation of an area of drilling concern does not supersede or preclude designation of part or all of an area as a Critical Ground Water Area (Section 42-233a, Idaho Code), Ground Water Management Area (Section 42-233b, Idaho Code), or Geothermal Resource Area (Sections 42-4002 and 42-4003, Idaho Code). ()

c. The designation of an area of drilling concern can include certain aquifers or portions thereof while excluding others. The area of drilling concern may include low temperature geothermal resources while not including the shallower cold ground water systems ()

02. Bond Requirement. ()

a. The minimum bond to be filed by the well driller with the Director for the construction or modification of any well in an area of drilling concern shall be ten thousand dollars (\$10,000) unless it can be shown to the satisfaction of the Director that a smaller bond is sufficient. ()

b. The Director may determine on a case-by-case basis if a larger bond is required based on the estimated cost to repair, complete or properly abandon a well ()

03. Additional Requirements. ()

a. A driller shall demonstrate to the satisfaction of the Director that he has the experience and knowledge to adequately construct or abandon a well which encounters warm water or pressurized aquifers ()

b. A driller shall demonstrate to the satisfaction of the Director that he has, or has immediate access to, specialized equipment or resources needed to adequately construct or abandon a well. ()

322. -- 324. (RESERVED).

325. DRILLING PERMIT REQUIREMENTS (RULE 325).

01. General Provisions. ()

a. The owner of a well to be constructed, drilled, deepened or enlarged on or after July 1, 1987 shall obtain a drilling permit from the Director prior to construction or drilling of the well. ()

b. The owner of a well under construction prior to July 1, 1987, for which the drilling equipment is at the site and construction is ongoing, shall not be required to obtain a drilling permit, provided that construction of the well was complete by August 1, 1987. The Director may extend the date for good cause. ()

c. The Director may issue a drilling permit to the owner of a proposed well, to the driller employed to construct the well, or to the owner's representative. ()

d. Drilling permits will not be issued for construction of a well which requires another separate approval from the department, such as a water right permit, transfer, amendment or injection well permit, until the other separate approval has been given by the department. The Director may grant a waiver if he determines that the public interest will be served by an expedited approval. ()

e. The Director may give verbal approval to a well driller for the construction of certain wells such as single family domestic wells and stockwater wells which do not require other separate approvals from the department, provided the driller files the drilling permit and appropriate fee with the Director within thirty (30) days of the verbal approval ()

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1179 f. The Director may give verbal approval to a well driller for the construction of a well for which
1180 other permitting requirements have been met, provided the driller files the drilling permit and appropriate fee with
1181 the Director within thirty (30) days of the verbal approval. ()

1182
1183 g. The Director will not give a verbal approval for well construction or drilling in a designated area
1184 of drilling concern. ()

1185
1186 h. Failure of the driller to submit a completed drilling permit and fee within the thirty (30) day period
1187 after receiving verbal approval to construct a well is cause for the Director to seek the penalties provided by statute
1188 and by these rules. ()

1189
1190 i. After the effective date of these rules, a well driller shall not construct, drill or modify any well
1191 until a drilling permit has been issued or verbal approval is given. ()

1192
1193 **02. Effect of a Permit.** ()

1194
1195 a. A drilling permit authorizes the construction, drilling or modification of a well in compliance with
1196 the conditions of approval on the permit. ()

1197
1198 b. A drilling permit does not constitute a water right permit, injection well permit or other
1199 authorization which may be required from the department prior to actual well construction and does not authorize
1200 use of water from the well or discharge of fluids into the well. ()

1201
1202 c. A drilling permit may not be assigned from one (1) owner to another. ()

1203
1204 d. A drilling permit authorizes the construction of one (1) well (except group monitoring well
1205 drilling permits) unless other holes started under terms of the permit are properly abandoned and the department is
1206 advised of the abandonment. ()

1207
1208 **03. Exclusions.** ()

1209
1210 a. Geotechnical borings for the purpose of mineral exploration or for the design of foundations for
1211 structures or for the design of dams and embankments are not subject to the drilling permit requirement but shall be
1212 constructed and abandoned in accordance with minimum well construction standards. ()

1213
1214 b. The Director may require abandonment of wells constructed pursuant to Rule 045.03.a if the
1215 wells are determined to cause waste or contamination of the ground water. ()

1216
1217 c. Wells constructed pursuant to Rule Subsection 045.03.a shall be abandoned in compliance with
1218 adopted rules when use of the wells cease. ()

1219
1220 **04. Fees.** ()

1221
1222 a. A drilling permit fee is not required for a well constructed and completed prior to July 1, 1987,
1223 provided the well is not deepened or the dimensions of the well are not increased on or after July 1, 1987. ()

1224
1225 b. The drilling permit fee for construction of a well for a single family domestic use, stockwater use,
1226 class V(c) heat pump injection associated with a single family domestic use or monitoring use or for any use with a
1227 rate of diversion of four one hundredth (0.04) cubic feet per second or less and for the storage of four (4) acre-feet
1228 per year or less shall be ten (\$10) dollars. (See IDAPA 37.03.03, "Rules for Construction and Use of Injection
1229 Wells" for the description of class V(c) injection wells). ()

1230
1231 c. The Director may issue a blanket drilling permit for site specific monitoring programs prepared by
1232 a licensed engineer or licensed geologist as provided in Section 42-235, Idaho Code, upon submittal of a fifty dollar
1233 (\$50) fee. ()

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1235 d. The drilling permit fee for well uses which are not included in Rules Subsections 045.04 b. and
1236 045.04 c. shall be one hundred dollars (\$100). ()

1237
1238 e. The difference between the drilling permit fee required by Rules Subsections 045.04.b. through
1239 045.04 d., as applicable, shall be paid when an existing well constructed on or after July 1, 1987, for which the lower
1240 drilling permit fee was paid, is authorized by the Department for a use which would require the larger drilling permit
1241 fee. This rule applies even though the existing well is not deepened or the dimensions of the well are not increased.
1242 ()

1243
1244 f. A drilling permit fee will not be required for a new or additional use from an existing well
1245 constructed on or after July 1, 1987, when the drilling permit fee for the new or additional use is the same amount
1246 which was previously paid for construction of the well in connection with the existing use. ()

1247
1248 326. -- 998. (RESERVED).

1249
1250 **999. PENALTIES (RULE 999).**

1251 A person owning or controlling a well that allows waste or contamination of the state's ground water resources or
1252 causes a well not to meet the construction standards provided in these rules, is subject to the civil penalties as
1253 provided by statute. A driller who violates the foregoing provisions of these minimum well construction standards
1254 rules is subject to the penalty provisions specified in Sections 42-238 and 42-238b, Idaho Code. ()

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